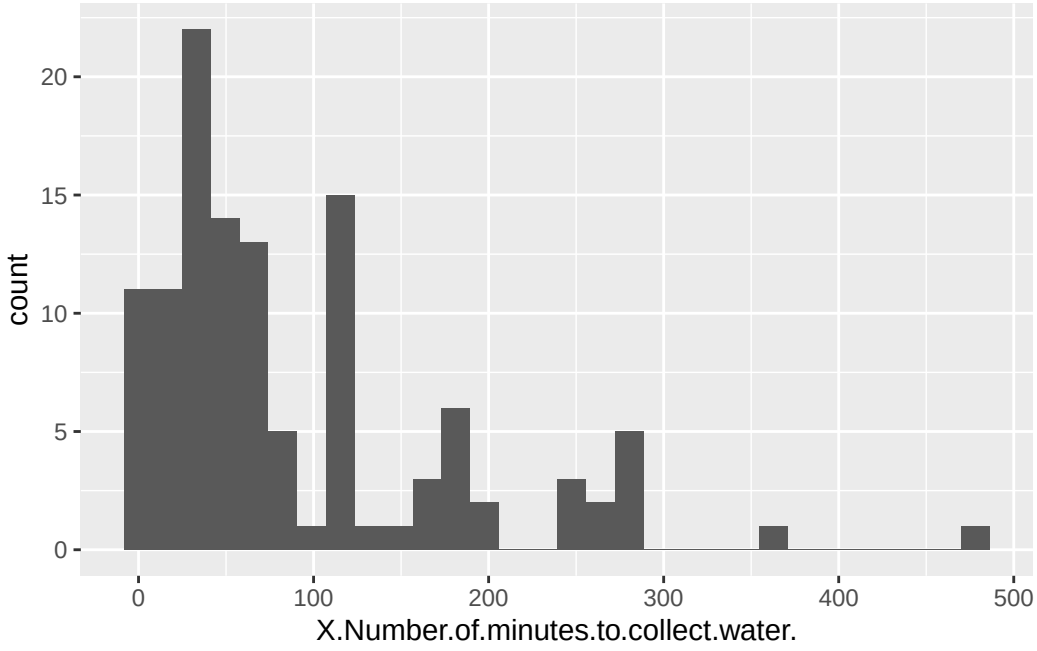
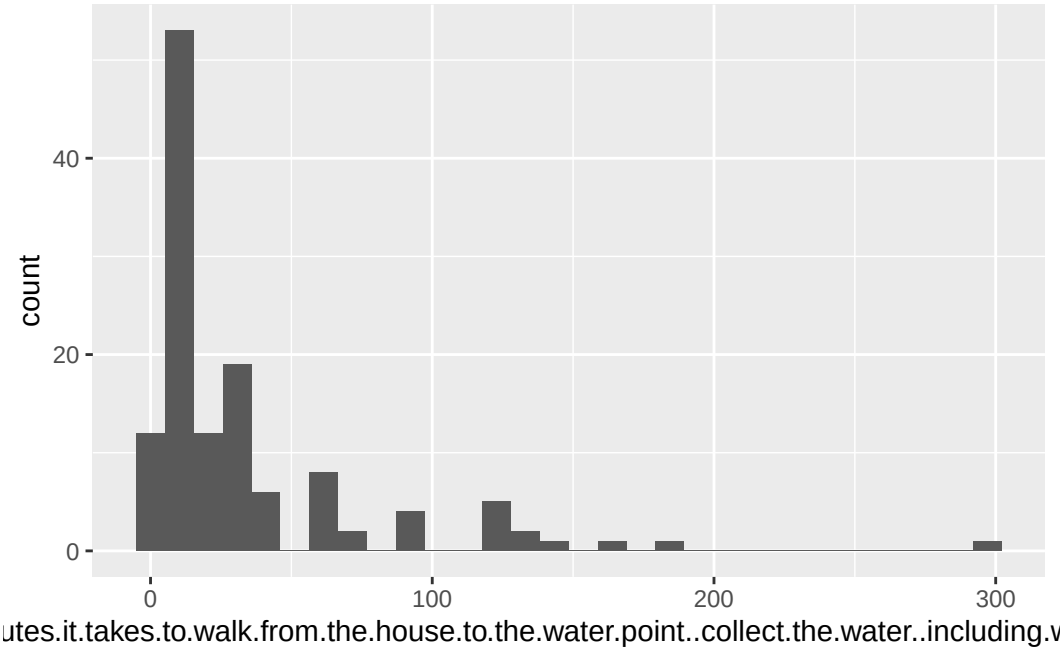
Water for Good

Report

Uni-variate EDA

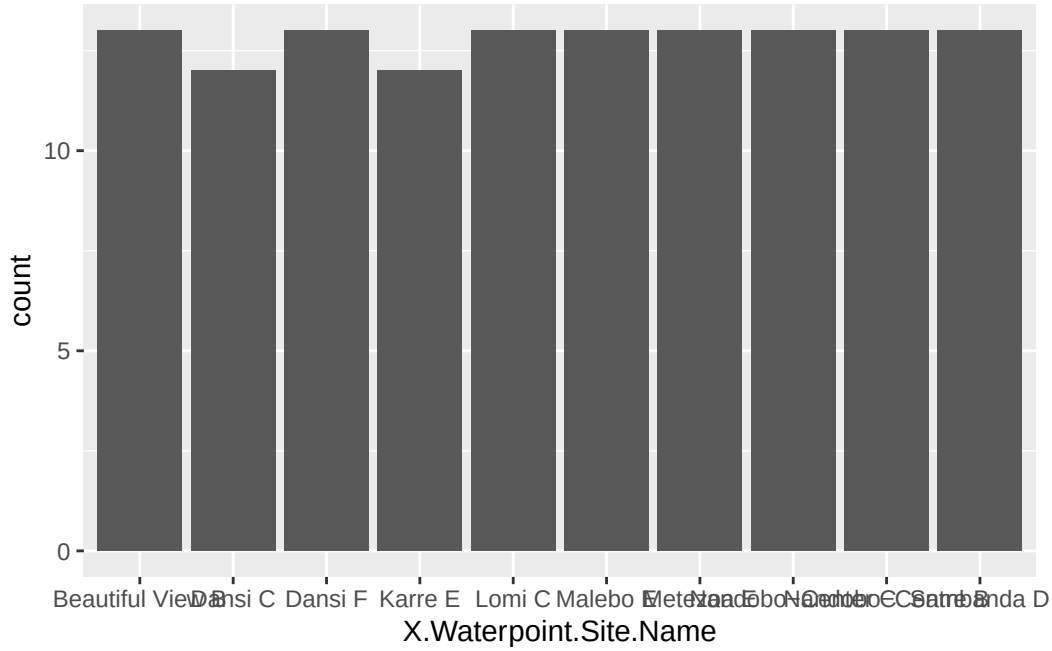


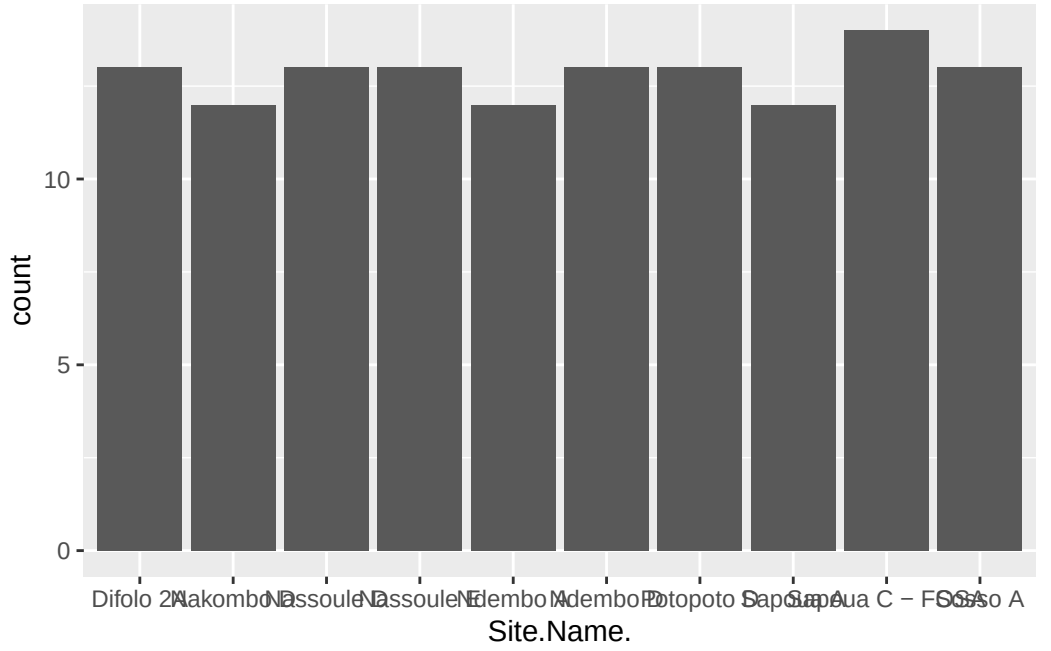



```
# A tibble: 1 x 8
  n_missing numeric.mean numeric.sd numeric.p0 numeric.p25 numeric.p50
      <int>        <dbl>      <dbl>      <dbl>       <dbl>       <dbl>
1        11         88.4       88.0          2          30          60
  numeric.p75 numeric.p100
        <dbl>        <dbl>
1         120          480
```

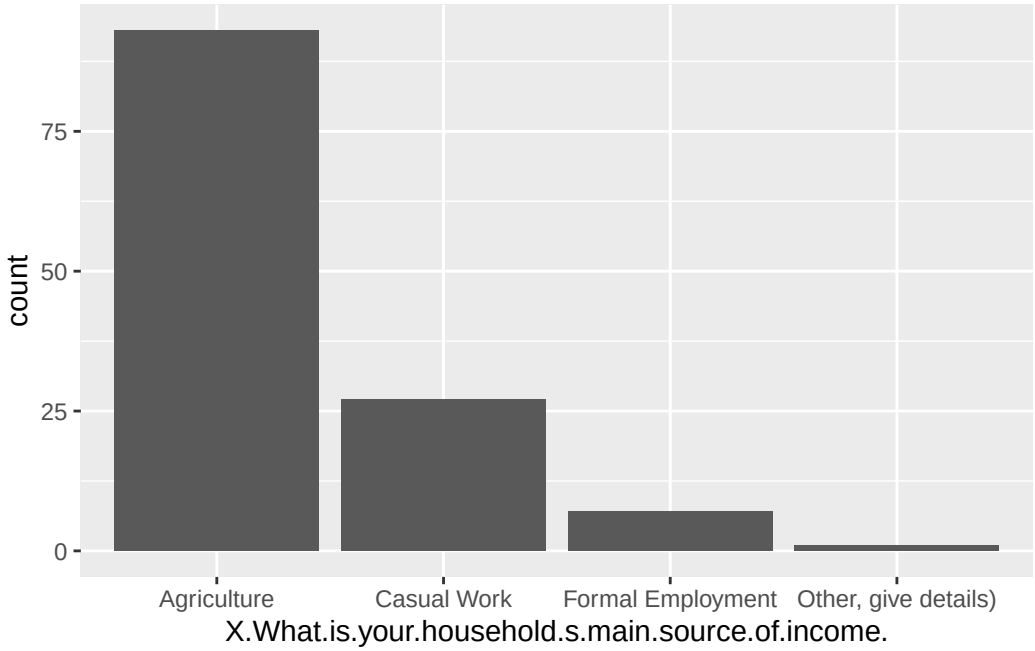
```
# A tibble: 1 x 8
  n_missing numeric.mean numeric.sd numeric.p0 numeric.p25 numeric.p50
      <int>        <dbl>      <dbl>      <dbl>       <dbl>       <dbl>
1         1         34.7       43.1          3          10          15
  numeric.p75 numeric.p100
        <dbl>        <dbl>
1          35          300
```

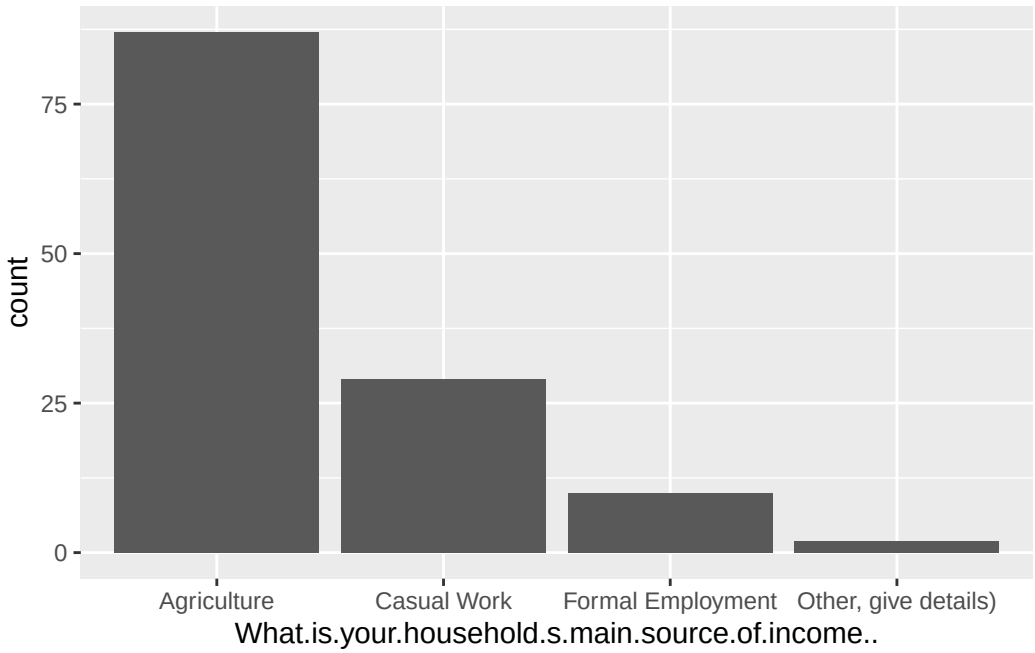
Both datasets are clearly right skewed therefore using the median amount of time for water collection drastically decreased from the baseline to the recent project survey. The median amount of time for water collection decreased from about 60 to 15 minutes. With the ranges also being drastically smaller for the minutes for the post survey.



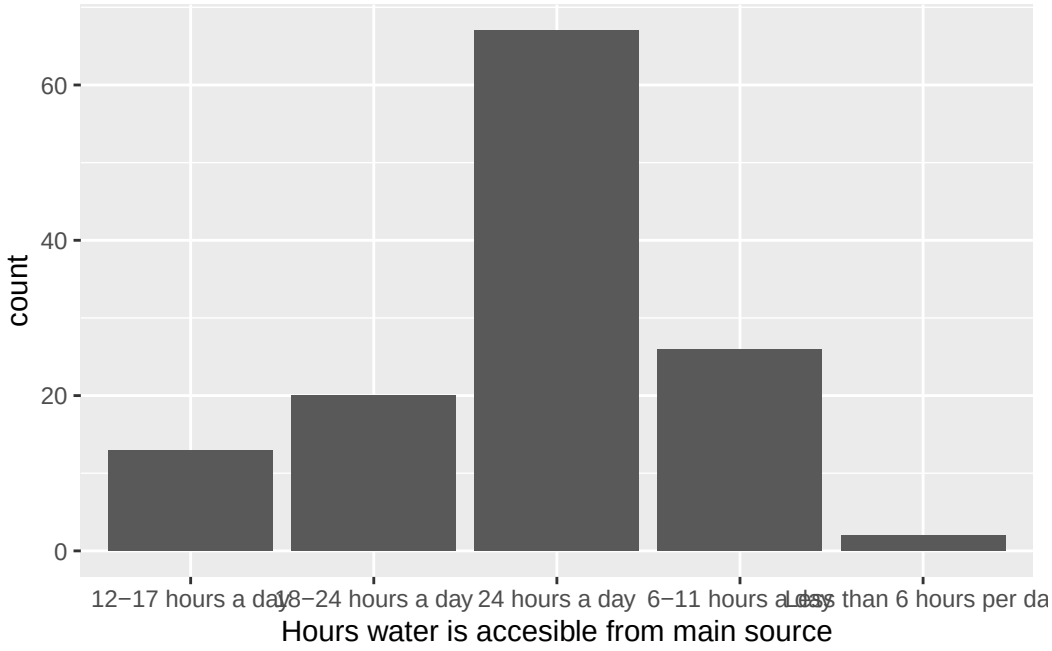


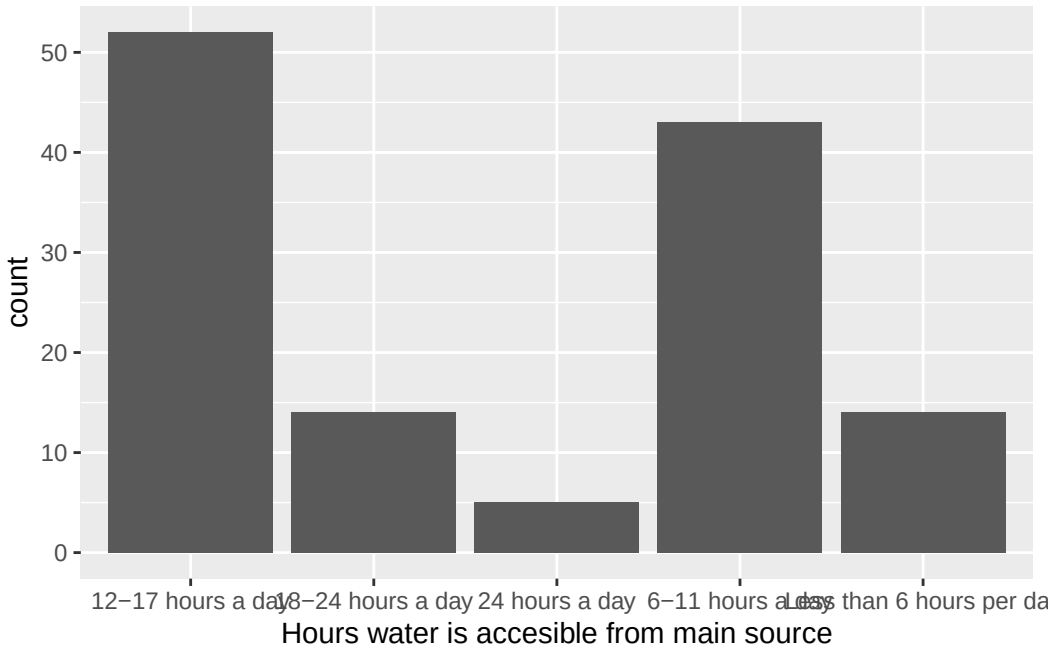
Based of the both the graphs, there is no overlap in the waterpoint site names. Having a project and baseline, wondering if there is any other data that would help keep one dataset as a base for comparison.





Both have similar household income levels, this could be used a baseline of comparison rather than the waterpoint site name.

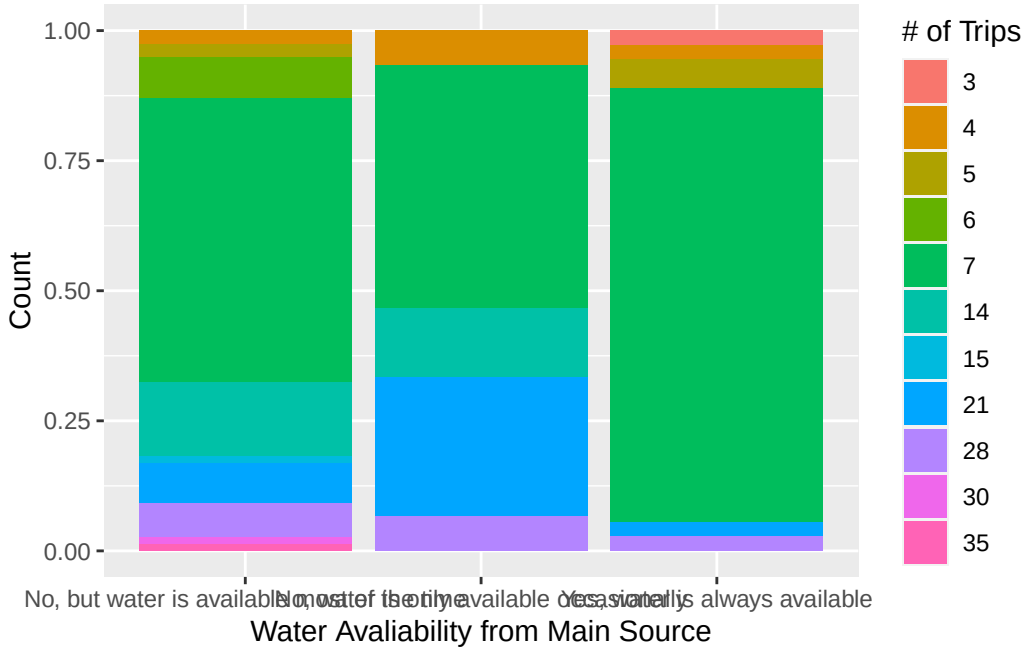




Based on both the graphs, there is a increase in the "12-17 hours a day" water availability post the baseline survey. However, an interesting thing that the 24 hours a day drastically decreased from around 65 to 5 wells available.

Bi-variate EDA

For the instances that water is always available, there seems to be a higher percentage of more trips taken to the main water source. One thing that did stand out to me was the response of "No, but water is available most of the time" had the most amount of "medium" trips taken (around 5-6 trips). Assuming that they had bigger containers to store and carry water, therefore needing less trips. The people who have constant water access, have smaller containers and therefore make more trips in order to obtain water from their main water source.



We see a drastic difference in the "Yes, water is always available" column as the number of trips frequented dropped from a high of 24-57 trips to a majority of only 6-7 trips. Assuming the project survey was done months after the wells were drilled, we could see that it helped in reducing the trips made by local residents.

WEEK 2

Linear Regression and Hypothesis Testing

term	estimate	std.error	statistic	p.value
(Intercept)	13.546	1.267	10.689	0.000
Is.water.always.available.from.your.main.water.source..	-2.798	0.964	-2.901	0.004

```
# A tibble: 2 x 2
  term                                                  p_value
  <chr>                                                   <dbl>
1 Is.water.always.available.from.your.main.water.source..   0.006
2 intercept                                                 0.006
```

$Trips = 13.546 - 2.798 * Water\_availability$

Where

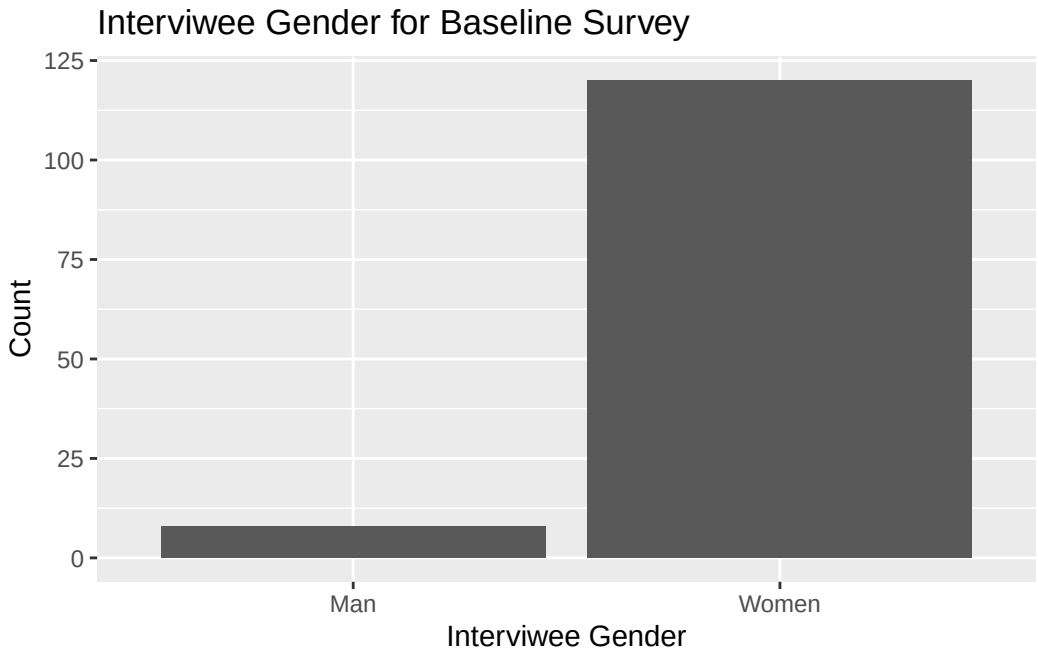
No, water is only available occasionally = 0, No, but water is available most of the time = 1

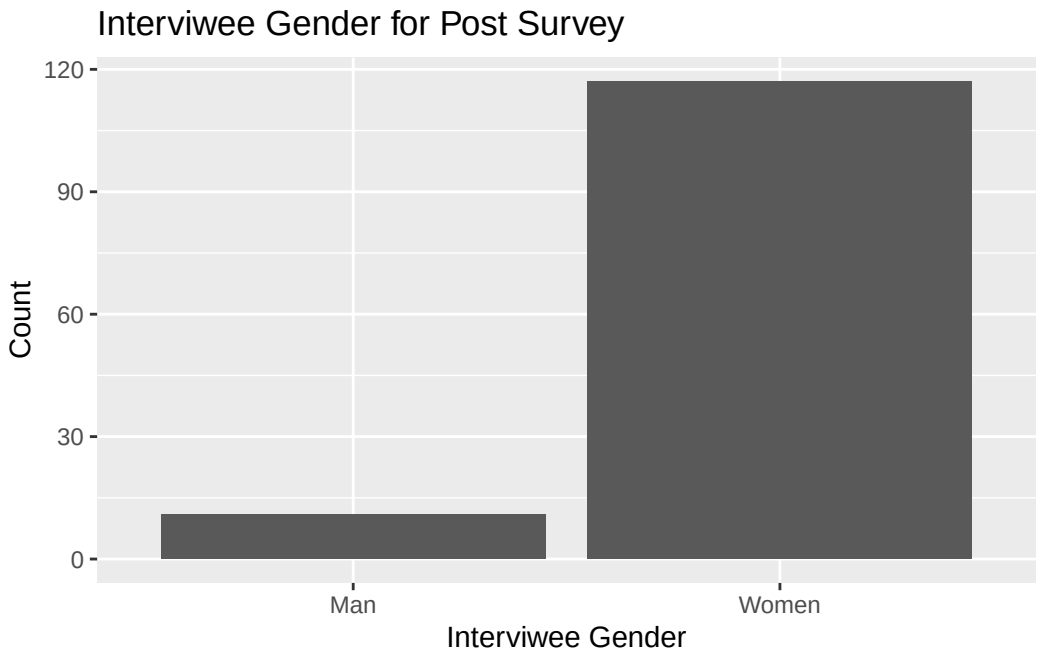
Yes, water is always available = 2

Since p-value is lower than 0.05, we can reject the null hypothesis and conclude that there is a statistically linear relationship between water availability from the waterpoint and number of trips taken. Therefore, whenever there are more water availability from the waterpoint site, the less number of trips taken.

Summary Statistics

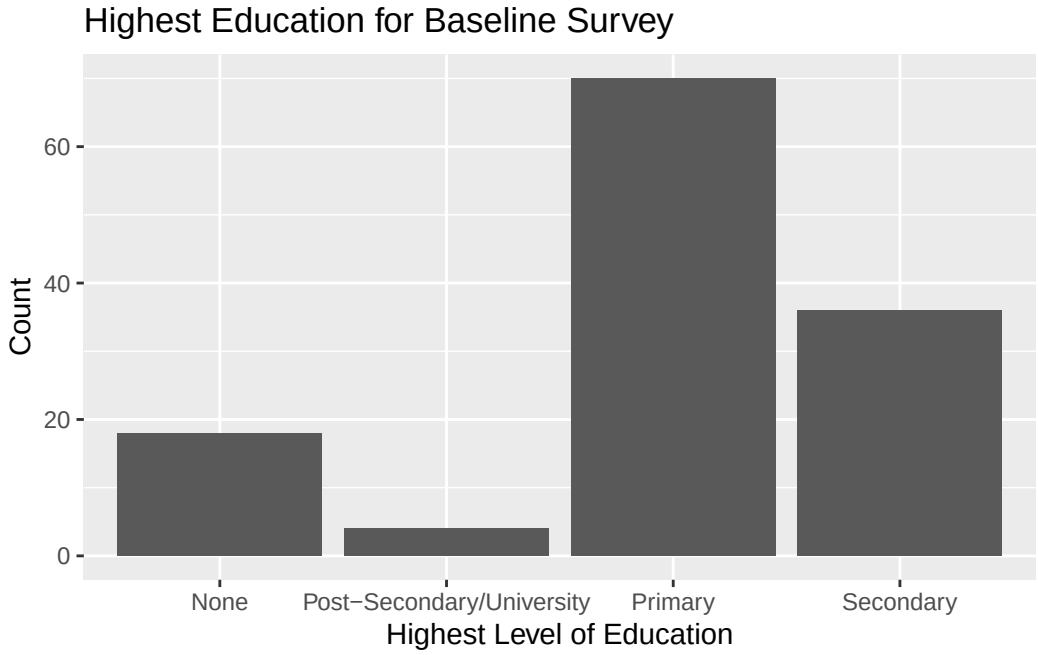
Counts by Gender

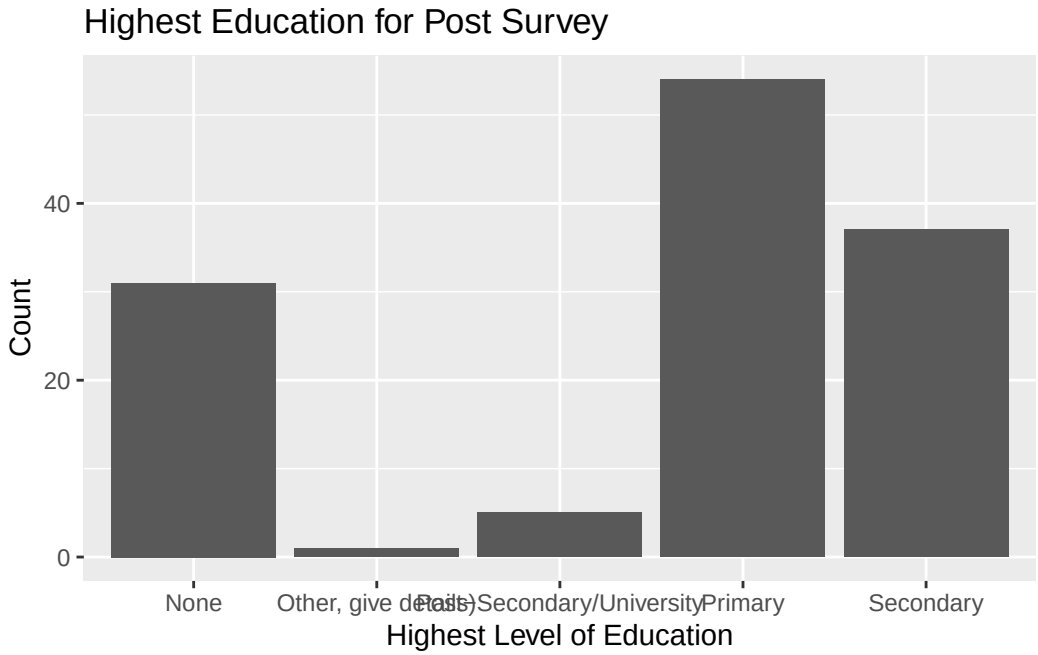




Both baseline and project survey results have similar demographics.

Counts by Education Level





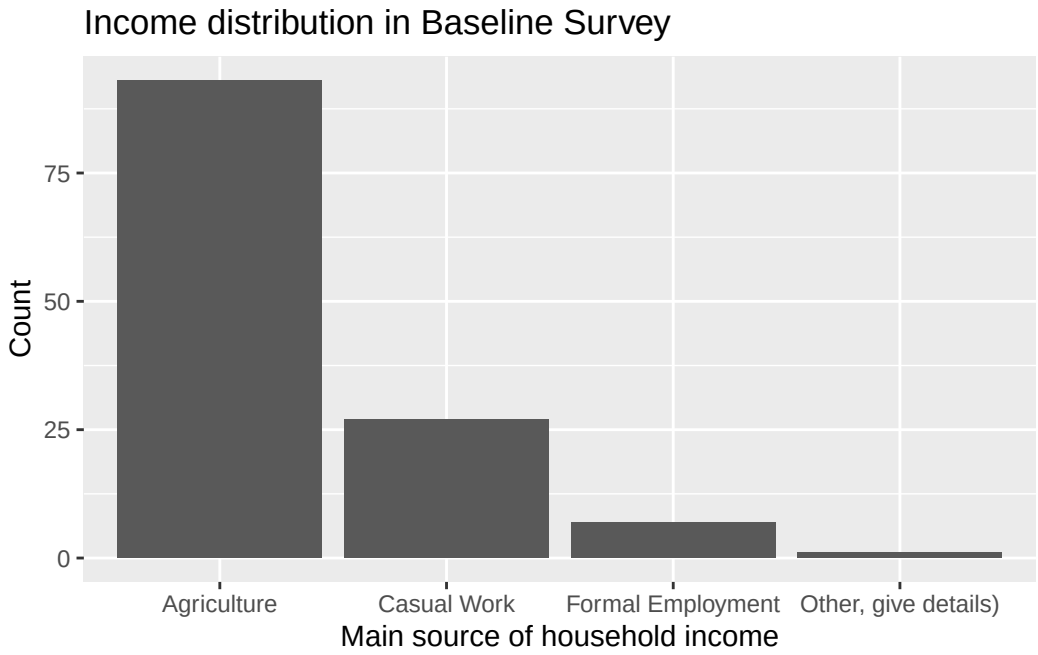

```
# A tibble: 4 x 2
  X.What.is.the.highest.level.of.education.obtained.by.the.head.of.the.h~1 count
  <chr>                                                                    <int>
1 None                                                                        18
2 Post-Secondary/University                                                    4
3 Primary                                                                     70
4 Secondary                                                                   36
# i abbreviated name:
#   1: X.What.is.the.highest.level.of.education.obtained.by.the.head.of.the.household.
```

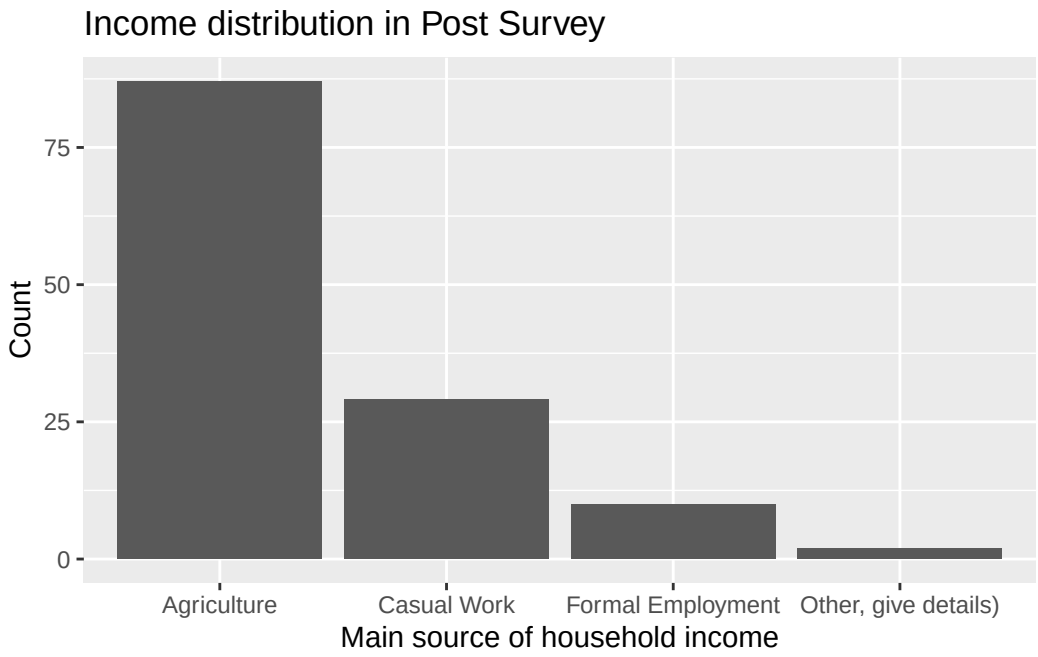
```
# A tibble: 5 x 2
  What.is.the.highest.level.of.education.attained.by.the.head.of.the.hou~1 count
  <chr>                                                                    <int>
1 None                                                                        31
2 Other, give details)                                                         1
3 Post-Secondary/University                                                    5
4 Primary                                                                     54
5 Secondary                                                                   37
# i abbreviated name:
#   1: What.is.the.highest.level.of.education.attained.by.the.head.of.the.household..
```

Both surveys had the same number of participants, 128. Baseline Survey had more people who

completed primary school, but the rest of the distribution regarding secondary, post secondary and other remained the same.

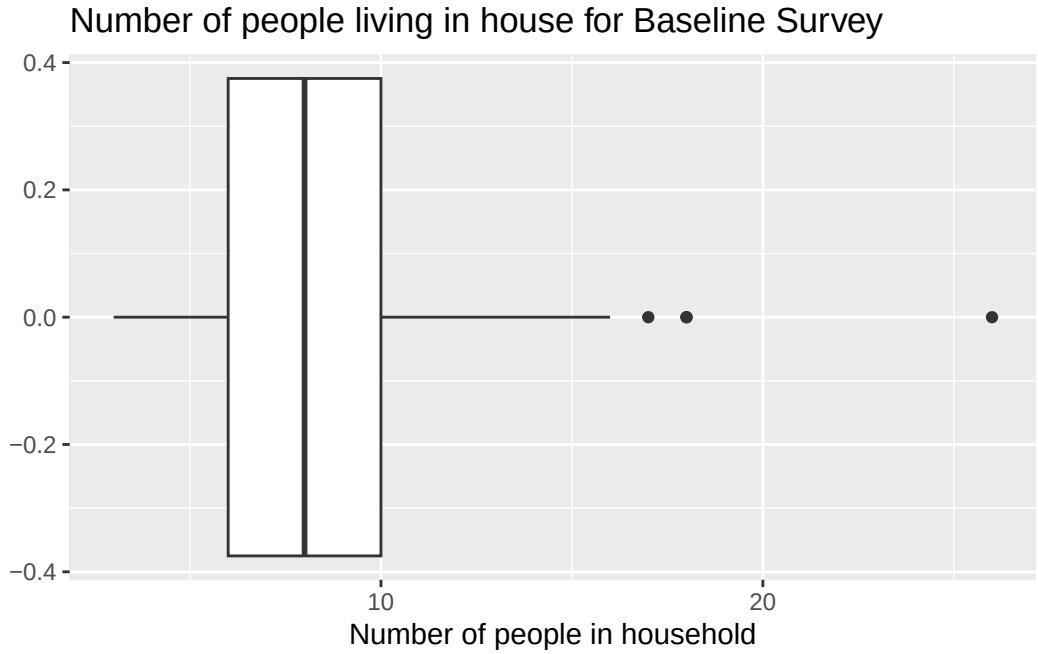
Counts by household income

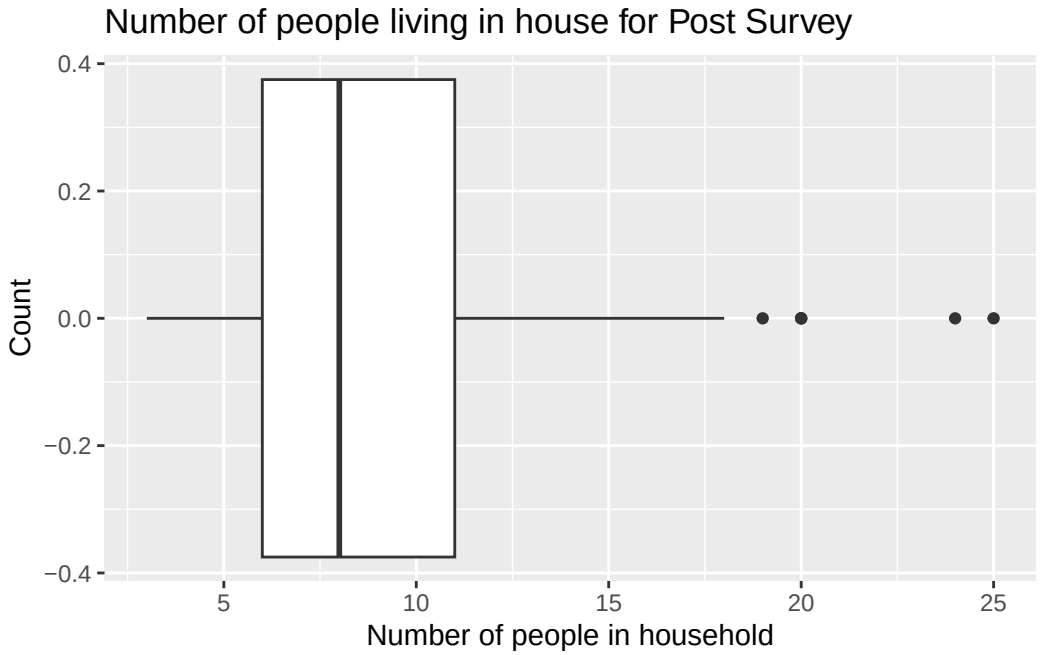




Similar distributions in Income distribution in both baseline and post survey.

Average number of people living in household





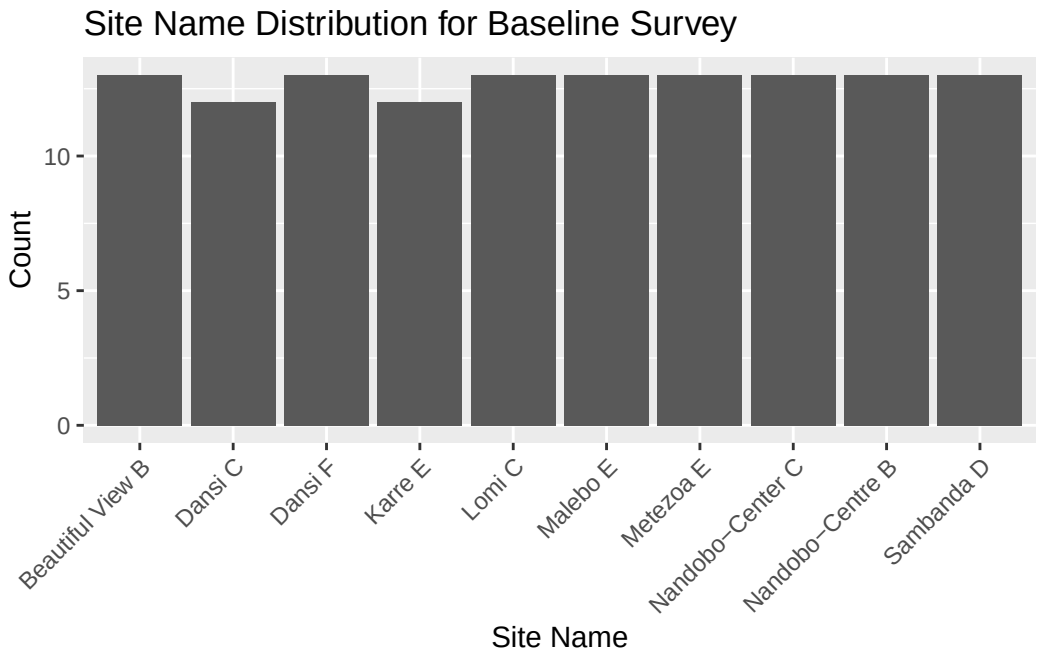

```
# A tibble: 17 x 2
   X.How.many.people.live.in.your.household.in.total..including.yourself. count
                                                                    <int> <int>
 1                                                                      3     3
 2                                                                      4     5
 3                                                                      5    14
 4                                                                      6    19
 5                                                                      7    21
 6                                                                      8    13
 7                                                                      9    12
 8                                                                     10    10
 9                                                                     11     8
10                                                                     12     9
11                                                                     13     2
12                                                                     14     5
13                                                                     15     2
14                                                                     16     1
15                                                                     17     1
16                                                                     18     2
17                                                                     26     1
```

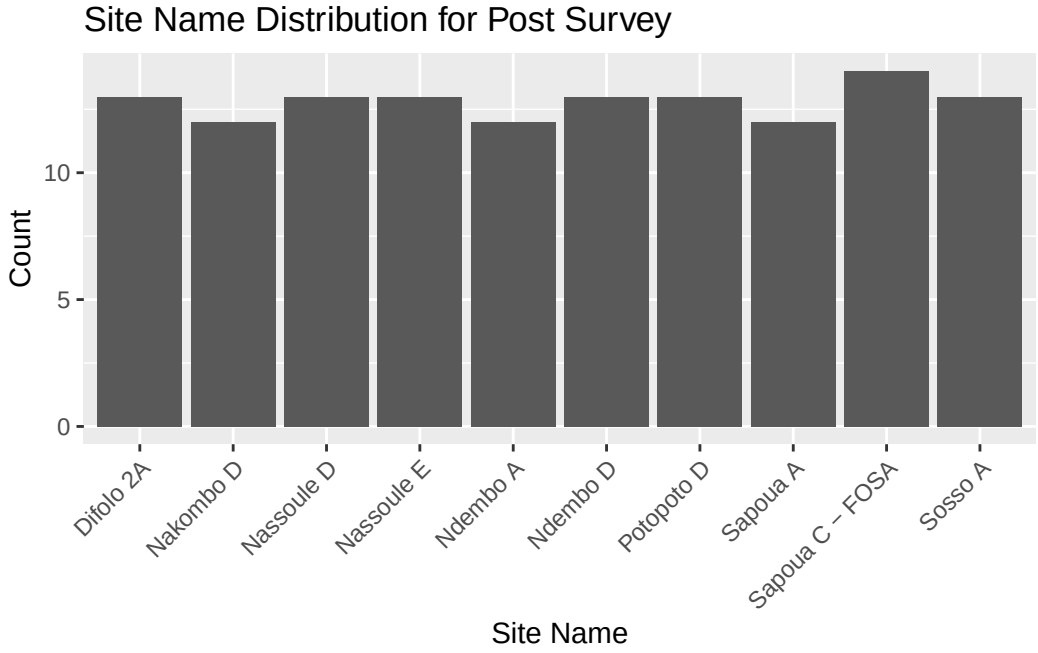
```
# A tibble: 19 x 2
```

```
   How.many.people.live.in.your.household.in.total..Ie.the.number.of.peo~1 count
                                                                      <int> <int>
 1                                                                        3     5
 2                                                                        4    10
 3                                                                        5    12
 4                                                                        6    16
 5                                                                        7    17
 6                                                                        8    13
 7                                                                        9     6
 8                                                                       10    15
 9                                                                       11     3
10                                                                       12     8
11                                                                       13     4
12                                                                       14     1
13                                                                       15     8
14                                                                       17     3
15                                                                       18     1
16                                                                       19     1
17                                                                       20     3
18                                                                       24     1
19                                                                       25     1
# i abbreviated name:
#   1: How.many.people.live.in.your.household.in.total..Ie.the.number.of.people.living.under
```

Similar distribution for both baseline and project.

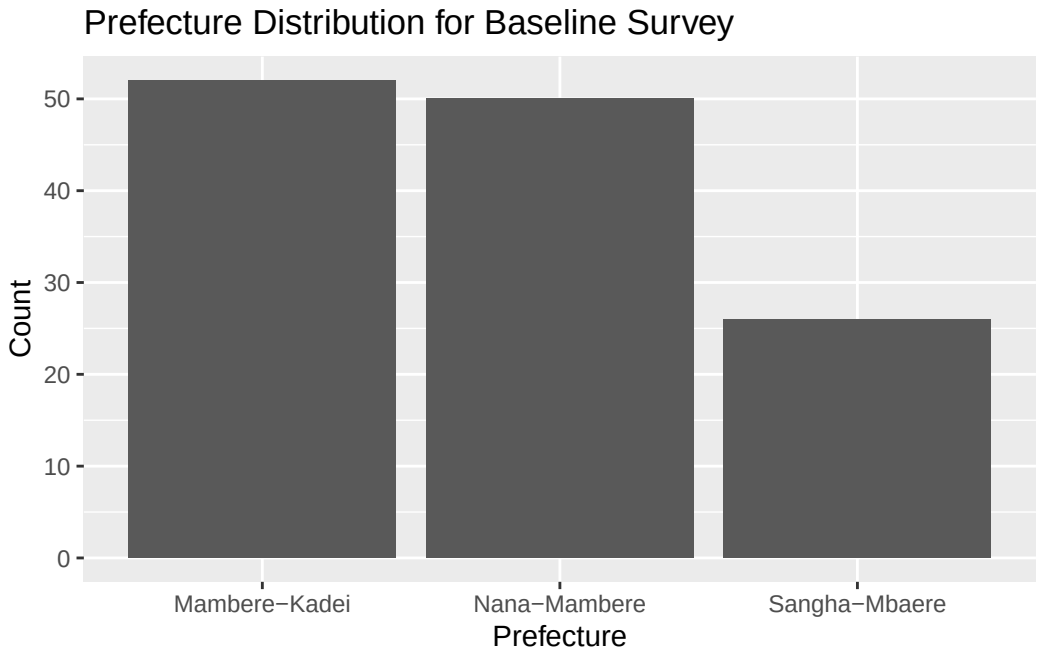
Waterpoint Site Name

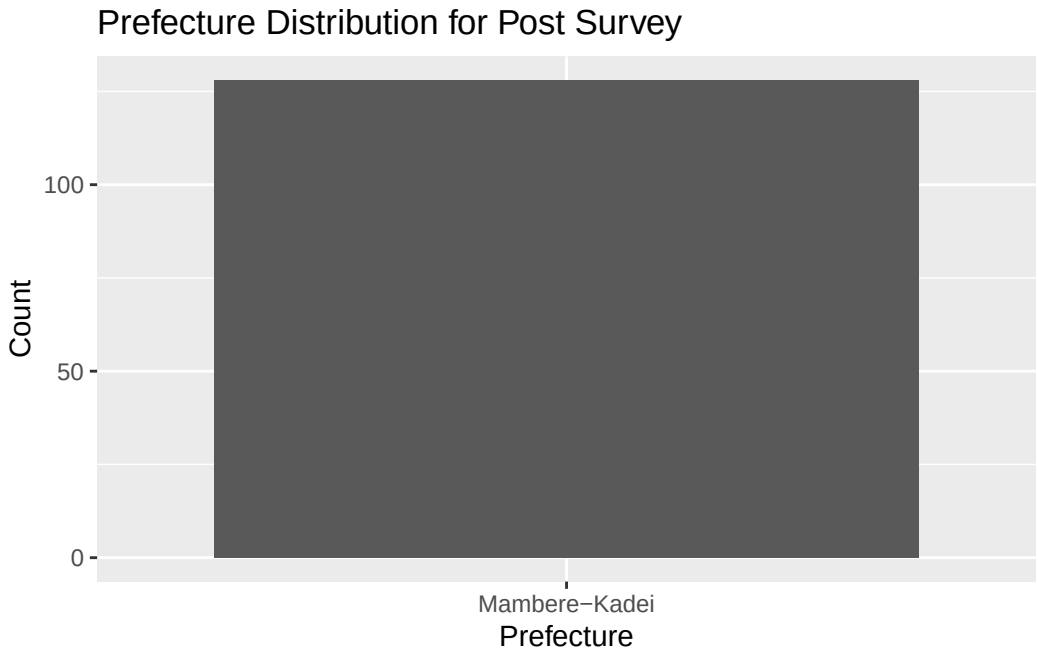




We can clearly see that baseline and project had different waterpoint site name. Difference between them suggests possibly not the best to compare rather create summary statistics for both surveys individually.

Subjects within Prefecture



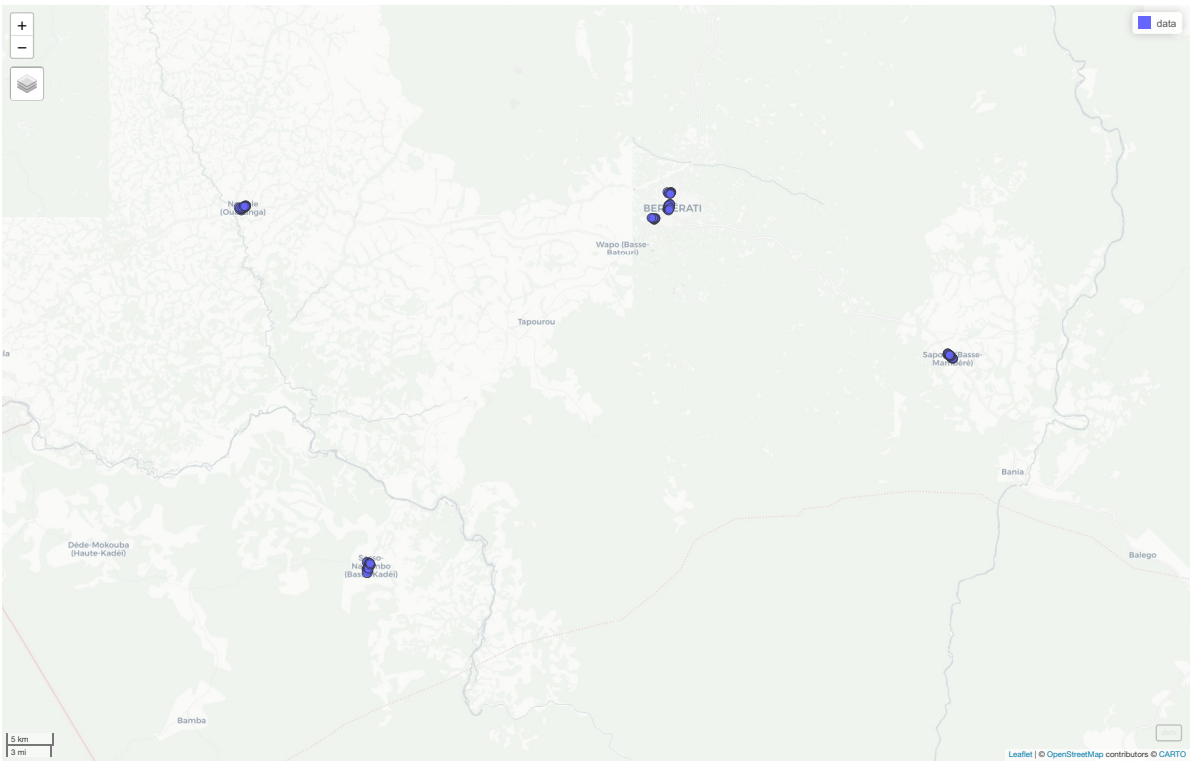


This makes it more clear as the post survey only included residents from the Mambere-Kadei prefecture, which could be the reason why the waterpoint site wells differed from the baseline

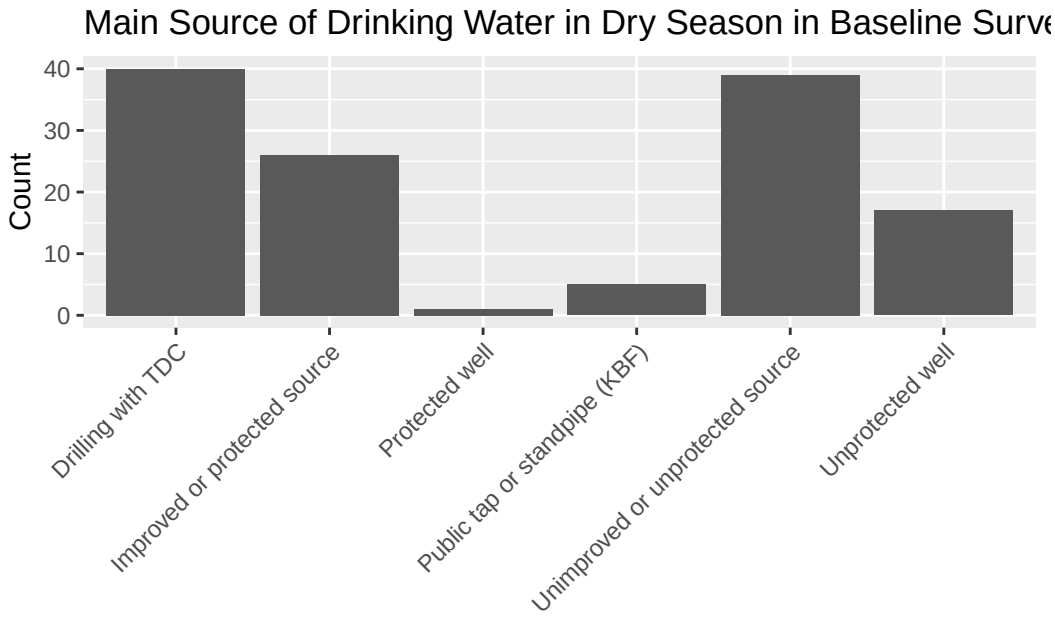
to post.

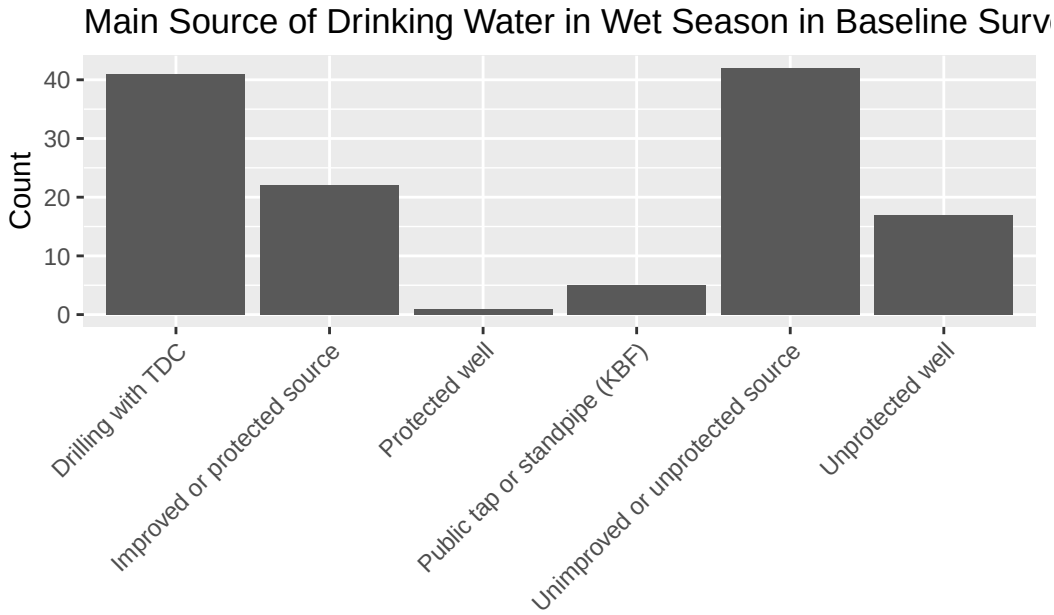
Map

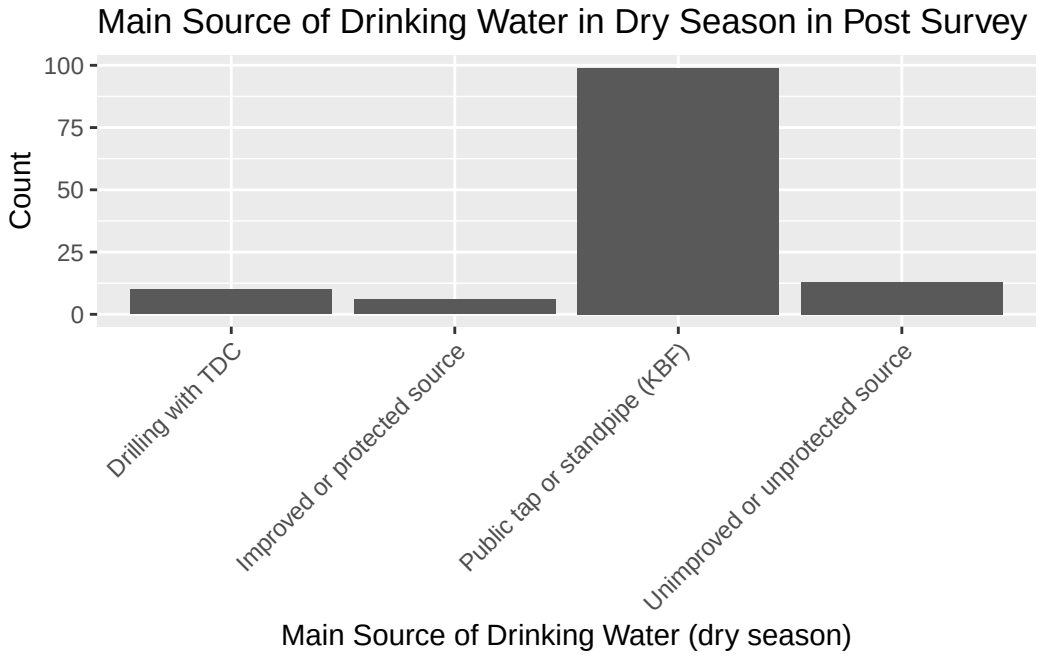

data
BOUAR
BATOURI
EAST
MBAÏKI
Leaflet | © OpenStreetMap contributors © CARTO

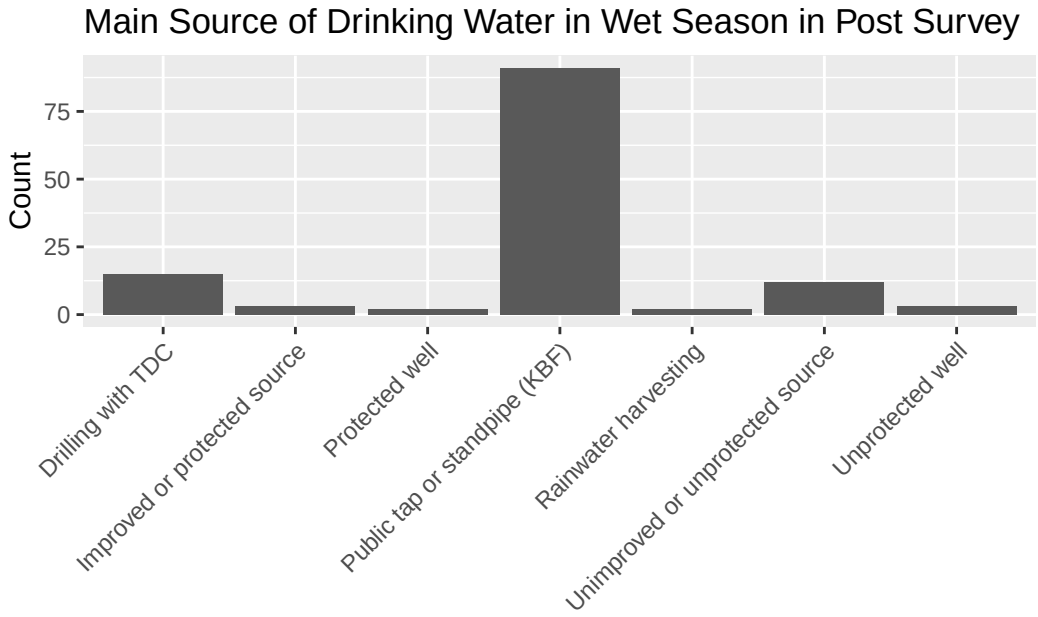


Categorical answers to survey by Waterpoint site




Main Source of Drinking Water in Wet Season in Baseline Surv
Count
40
30
20
10
0
Drilling with TDC
Improved or protected source
Protected well
Public tap or standpipe (KBF)
Unimproved or unprotected source
Unprotected well
Main Source of Drinking Water (wet season)


Main Source of Drinking Water in Dry Season in Post Survey
Count
100
75
50
25
0
Drilling with TDC
Improved or protected source
Public tap or standpipe (KBF)
Unimproved or unprotected source
Main Source of Drinking Water (dry season)

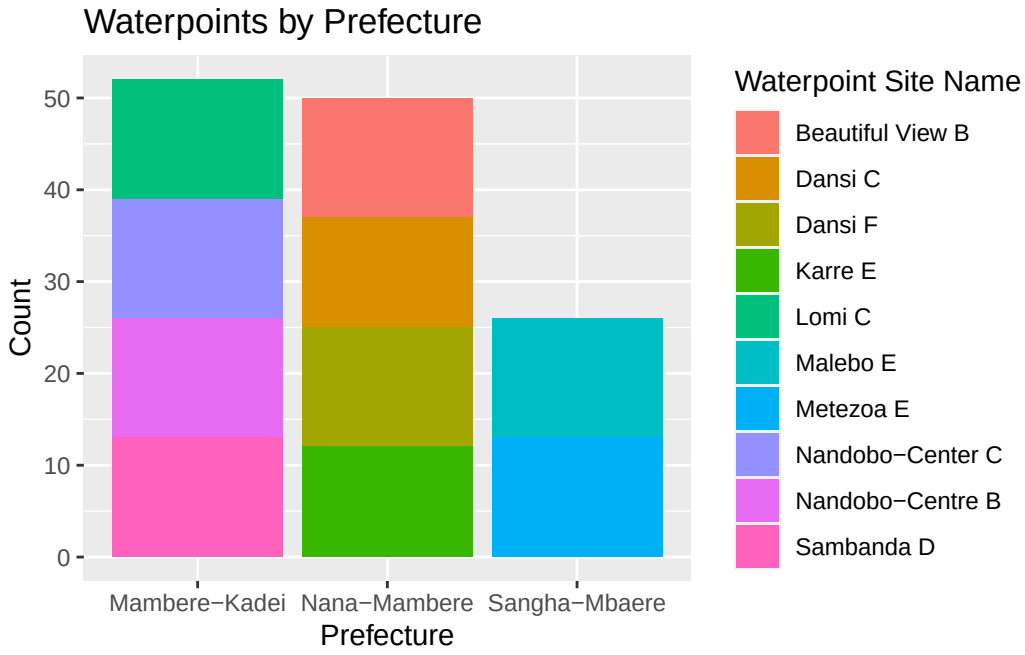


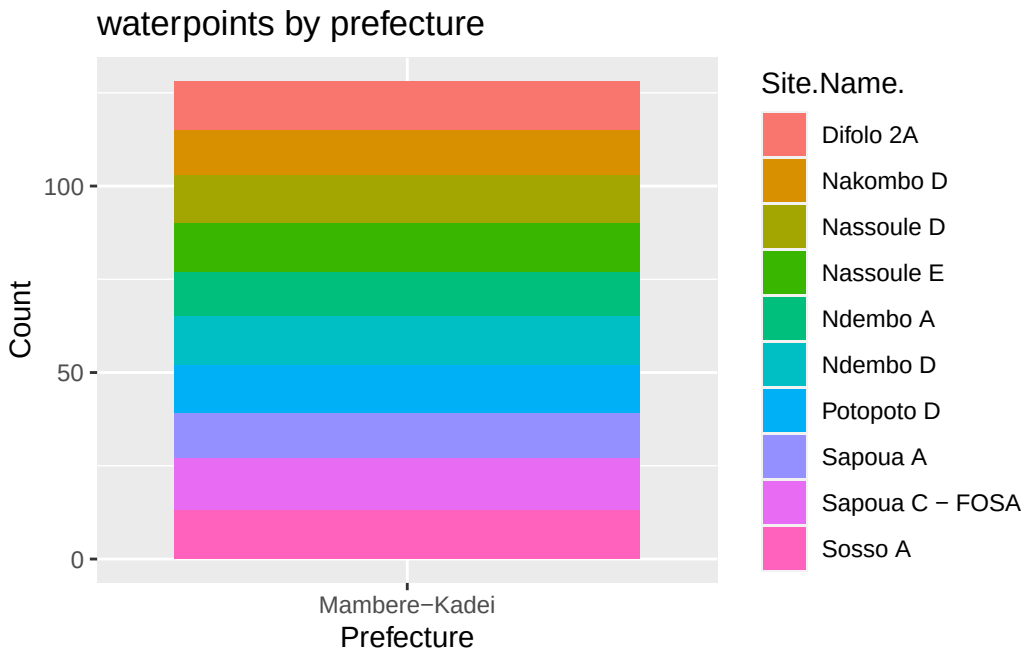

```
# A tibble: 10 x 2
   X.Waterpoint.Site.Name count
   <chr>                  <int>
 1 Beautiful View B          13
 2 Dansi C                   12
 3 Dansi F                   13
 4 Karre E                   12
 5 Lomi C                    13
 6 Malebo E                  13
 7 Metezoa E                 13
 8 Nandobo-Center C          13
 9 Nandobo-Centre B          13
10 Sambanda D                13
```

```
# A tibble: 10 x 2
   Site.Name.      count
   <chr>           <int>
 1 Difolo 2A          13
 2 Nakombo D          12
 3 Nassoule D         13
 4 Nassoule E         13
 5 Ndembo A           12
```

```
 6 Ndembo D           13
 7 Potopoto D         13
 8 Sapoua A           12
 9 Sapoua C - FOSA    14
10 Sosso A            13
```

Both project and baseline have differing waterpoint site name, however both have an even count distribution of wells.





Clearly, this graph visualizes the waterpoint site names at each prefecture in both project and baseline surveys.